

Biofuels for Energy Security

Right now, the United States imports more than 53% of the petroleum it uses for transportation fuel. The U.S. Department of Energy (DOE) estimates that this will increase to 75% by 2010. Inevitably, this heavy dependence on imported oil makes our oil supply vulnerable to international politics, economics, and military activities. DOE, the U.S. fuels industry, automotive manufacturers, and the agricultural and forestry products industries are working together to ease our dependence on foreign oil and improve our energy security by bringing biofuels to the marketplace.

Biofuels—primarily bioethanol and biodiesel—are made from biomass. *Biomass* is a collective term that encompasses many products of human activity—agricultural residues, forestry residues, and municipal solid wastes—as well as natural products from the Earth's prairies, jungles, forests. These products contain vast energy reserves that have been used for thousands of years to warm our homes, cook our food, and light the darkness.

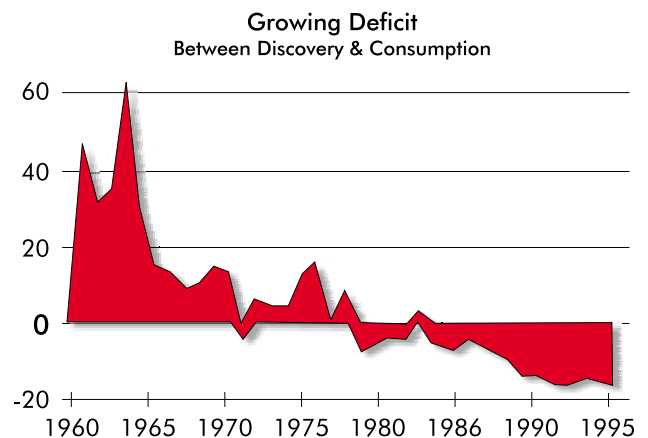
The United States has a vast biomass resource. Oil-bearing crops such as soybeans can be used to make biodiesel; residues from food and nonfood crops can be converted into liquid fuels such as ethanol. And the nation's forests are replete with small-diameter trees and underbrush—fire hazards in many areas—that can be used to produce fuel. Most regions of the United States has areas with good potential for energy crop yields, and there is no need to encroach on croplands. Facilities for converting these products to fuels

could be strategically placed to create a readily available biofuels supply network across the Nation.

Using this resource to produce transportation fuels can increase our transportation fuel supply, decrease our dependence on foreign oil, and strengthen our energy security. The biggest obstacle to using biofuels is that their production costs are higher than those for petroleum; consequently, the fuels are more expensive than current transportation fuels.

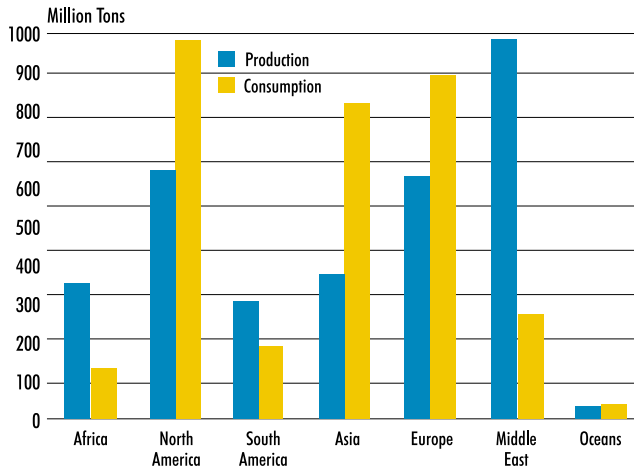
Increasing demand, decreasing supply

The Earth's petroleum supply is finite (the graph below illustrates the deficit between discovery and consumption). But for most of the 20th century, the Earth's population has consumed it as though it would last forever.



In the 1960's discovery volumes outpaced consumption. Today, we consume 75 million barrels per day while finding only 15 million barrels; a deficit that continues to grow, as shown above.

Oil Production and Consumption, 1996: Regional Distribution



Vulnerabilities to supply disruptions will be greatest in North America, Asia, and Europe where consumption greatly exceeds production.

Oil consumption is still increasing dramatically as the world's population increases, and the number of cars being driven increases faster than the population.

Experts agree that, since about 1859, the world has consumed 800 billion barrels of oil. They disagree about how much is left and how long it will last. They do agree, however, that less new oil will be found and that prices will increase.

During the 1970's, when our dependence on foreign oil was considerably less than it is today, a 2 percent drop in the oil supply caused long lines at fueling stations and raised gasoline prices. That was a short-term deficit, but the reality of increasing world oil consumption (now at 73 million barrels per day), and the declining supply (only 15 million barrels are found each day) make our country more vulnerable than ever.

Depletion of U.S. Oil Reserves

To hedge against abrupt interruptions of oil supplies from abroad, the U.S. government stores 587.5 million barrels of crude oil

in its Strategic Petroleum Reserve (SPR). This reserve, begun in 1979, is a system of storage caverns in Louisiana that hold oil for the United States to use in case of a sudden oil shortage. If all imports from all sources were cut off, the SPR would last about 75 days at current rates of consumption. Very little oil could be obtained at short notice from American sources.

Since 1993, despite increasing U.S. oil imports, no oil has been purchased for the reserve. And Congress recently mandated selling oil in the reserve at half-price to pay for its annual operating cost of more than \$200 million.

Oil and National Security

Debate persists regarding the severity of threats to our national security that imported oil represents. But as the United States becomes increasingly dependent on foreign oil, influence over our economic health spreads to powers that exhibit anti-Western sentiments. The money we provide these powers enables them to buy weapons and influence. Our country could ease the threats that accompany dependence on imported oil with increased investment in developing technology to convert biomass into transportation fuel.

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